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ABSTRACT

When patients do not possess the same background knowledge, or schemata, as the Western medical practitioner, they are unable to understand fully what is communicated because they do not have the necessary conceptual framework for integrating the information presented. A study demonstrated how the absence of shared concepts between doctor and patient might impede even willing patient compliance with orthodox directives. Matched groups of 15 American and 15 Australian Aboriginal women heard and recalled two stories that incorporated Aboriginal and Western conceptions of illness and health. Results showed that the American subjects, because they were completely unfamiliar with Aboriginal culture, provided strong support for the claim that the presence of schemata is a factor influencing comprehension and recall of a text. Both groups produced culturally motivated elaborations of their native texts. (FL)

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INTERCULTURAL MISUNDERSTANDINGS ABOUT HEALTH CARE: RECALL OF DESCRIPTIONS OF ILLNESS AND TREATMENT

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Intercultural Misunderstandings about Health Care: Recall of Descriptions of Illness and Treatment

Effective utilization of orthodox health services in areas of the world where non-Western and Western health care systems co-exist is believed to depend in part on the congruence of patients' and practitioners' beliefs about illness and treatment. Variation in underlying values, assumptions, and general medical information has been implicated as the basis for the conscious rejection of standard Western health care practices in some intercultural situations (Snow, 1974; Hamilton, Note 1). However, in this paper it will be argued that variation in underlying knowledge systems can impede even willing compliance on the part of culturally divergent clients because information is either not understood when it is first communicated or not recalled accurately. This position has been suggested by other researchers and has been supported by anecdotal evidence (Creyghton, 1977; Kleinman, Eisenberg, & Good, 1978; Stacy, 1975), but to the best of our knowledge it has not previously been related to any theory of memory or learning. The present study proposes a schema theory explanation of this phenomenon.

Briefly, schema theory proposes that abstract knowledge structures--schemata--provide the framework for comprehension (Anderson, Reynolds, Schallert, & Goetz, 1977). What one understands from a discourse, either oral or written, is a function of how well the information fits one's existing schemata or of one's ability to modify schemata to cope with new information. If the underlying structure includes "slots" for holding the details presented, the discourse will be understood and recalled.

If the schema is absent, or only poorly articulated, the information either will not be recalled or will be distorted. Since experience and knowledge are embedded in culture, schemata are culture-bound.

The effects of culture-specific knowledge on text comprehension have been demonstrated in a number of studies. Bartlett had Englishmen read an Amerindian folktale, which was accommodated to their own culture as they recalled it at increasing time intervals (Bartlett, 1932). Steffensen, Joag-dev, and Anderson (1979) provided evidence for the facilitating effect of cultural knowledge as measured by shorter reading time and a higher level of appropriate inferencing in the recall of the text based on the reader's culture. Cultural interference was indicated by longer reading time and a higher error rate in the recall of the text based on the foreign culture.

An assumption which underlies the present study is that the same cognitive processes underlie both oral and written comprehension of narratives. Measuring comprehension on the basis of written summaries or written recalls of texts, very similar results have been found for written or oral presentation (Kintsch & Kozminsky, 1977; Kintsch, Kozminsky, Streby, McKoon, & Keenan, 1975). In an investigation of the effect of both mode of presentation and mode of recall, written recall was more accurate then oral but no other results were significant (King, 1968). Sanders (1973) found a small advantage for reading over oral presentation when the retention task was a multiple choice test, as did King and Maddil (1968) using six different presentation methods.

The present experiment, which employed a balanced design, extends the study of the role of cultural background knowledge in text

comprehension to the oral mode. Two groups of subjects participated in the study: 15 Aboriginal women living in an isolated bush settlement in Australia and 15 white American women living in rural Illinois. Two texts describing illness and medical treatment in Western and Aboriginal societies were used. It was expected that those participating in the study would have well-developed schemata for the information presented in the native text. In addition, this topic would provide insight into possible reasons for problems in the delivery of health care to the Aboriginal group.

The conceptualizations about physical well-being, the causes of disease, and the procedures for treatment differ enormously between Western and Aboriginal societies. Western medicine is based on germ theory and scientific methodology, with only minimal attention being directed to the effect of patients' attitudes and beliefs on their contracting an illness and the subsequent prognosis. In the Aboriginal groups of Australia, illness is a facet of the metaphysical system. Disease and death may be attributed to sorcery or to the violation of a taboo. For example, Maddock (1974) notes the belief that "damage to certain religious places, even if unwitting, will cause the death of persons associated with those places" (p. 169). In describing the differences between Western and Aboriginal beliefs, Hamilton (Note 1, p. 6) states:

> The most fundamental difference between Aboriginal and European conceptual schema is based on the Aboriginal belief that all ill health is caused, not by their own personal practices, nor by "germs," but by the intervention of agencies usually not amenable to individual or family control. The transmission of diarrhoea, for instance, is well known to most Europeans, and its cause is generally attributed to pathogens. The people in

> Arnhem Land, however, said that the children got diarrhoea when the wind blew in a particular direction, from the Diarrhoea Dreaming Place. The people of Central Australia had an almost identical belief. When the waters of a particular waterhole were disturbed the wind carried its influences to the people. A number of other similar causes for diarrhoea were given, none of them embodying the kind of explanations Europeans would invoke.

Treatment is in the form of sorcery, and restoration to health is effected by the tribal practitioner. Unlike Western medicine, Aboriginal treatment typically involves a large number of the victim's kin and is conducted in public view. Practices vary in different parts of the country, but often involve the removal of evil influences from the victim's body. Hamilton (Note 1) suggests that there are profound differences in the attitudes of Western and Aboriginal groups concerning the responsibility of the individual for his/her own well-being. Western people believe they can control the external environment by physical means and, since illness is believed to be caused principally by external agents, they accept some degree of responsibility for their own health. Aborigines do not believe they have such a degree of control over their environment, and do not have feelings of guilt about illness.

Aborigines are encouraged to make use of Western medical services. Such use is increasing, but its effectiveness, particularly with regard to preventive practices, is disappointing (Stacy, 1975; Hamilton, Note 1). That this can be attributed in part to conflicting belief systems regarding health and disease on the part of Aboriginal patients and Western medical practitioners is the hypothesis of this study.

Method

Subjects

Fifteen Aboriginal women living at a small federally supported settlement in the Northern Territory of Australia and 15 American women who were enrolled in adult education classes in a public school in Illinois participated in the study. American subjects were matched to Australian subjects on the basis of age and education. The age range for Aboriginal subjects was 18 to late 40's, and for Americans, 17 to 61. Respective educational levels were 0 to 12 years and 7 to 12 years of formal schooling. American subjects had more education than their Aboriginal counterparts. This was due to the difficulty in finding American women to match Aboriginal women who had not completed elementary school or, in two cases, had had no formal education. In spite of their higher educational level, the American subjects were the more culturally naive population because they had no knowledge of the Australian bush culture, particularly medical and religious practices. The Australian subjects, on the other hand, had all had experience with Western medical practices and theories to some degree; many had been hospitalized at one time or another, and all used the community nursing station. The Western text did not impress them as being particularly bizarre.

The Australian subjects were polylingual; their speaking competencies including Standard English (SE) and/or Australian Creole English (ACE), as well as one or more indigenous Australian languages. All understood Standard English.

Materials

Two passages were used that described Aboriginal and Western concepts of illness and treatment. The Western passage, which related the case of a young boy becoming ill from eating spoiled food, his mother's reactions, and the treatment he received, was written by the senior author. The Aboriginal passage was an account given by a Walbiri to a physician at Prince Henry Hospital, Sydney (Cawte, 1974). In this text, the Walbiri told how he had become ill from bones placed in his body by the spirit of a sacred site. The treatment he received from a bush doctor aided by other Aborigines and the attitudes of both patient and practitioner towards the illness and its cause are described.

The passages were analyzed for T-score, which gives a measure of syntactic complexity based on the average number of words in an independent clause. The T-score for both passages was 8.4. The passages were parsed into idea units, which were verified by two independent judges. There were 114 and 98 idea units in the Aboriginal and Western stories, respectively. Both stories were 346 words long.

Design and Procedure

This study was run orally, with each subject tested individually. One of the stories was read to the subject, after which a number of personal data questions were asked. Besides supplying information used to match subjects, these questions were intended to inhibit short-term memory. The subject was then asked to retell the story, keeping it as close to the original as possible. The second story was read, additional personal data questions were asked, and the second story was recalled. The order of the two passages was counterbalanced.

Both stories were read to all subjects in Standard English. Aboriginal subjects were told that they could retell the story in English or in creole. No such instructions were given to the American subjects.

Scoring

A number of variables were analyzed in subjects' recall protocols. First, the number of idea units from the original text that were recalled correctly yielded a score for gist. Second, modifications of the text were determined. Two principal types of modifications were considered: elaborations and distortions. Elaborations are extensions that are fully consistent with the cultural milieu of the text. For example, if a subject recalled part of the treatment in the Aboriginal passage and described it as "a sort of ritual," the idea unit was scored as appropriately elaborated. Such changes are often considered textbound inferences by members of the culture. The fact that they cannot be derived from the text can most easily be ascertained by having someone who does not share that background compare the text and the subject's rendering of it.

Distortions are extensions of the text that are not consistent with the beliefs underlying the passage and are generally considered errors by those who share the passage's undergirding schemata. Many of these distortions could be attributed to a lack of knowledge about the foreign culture or to intrusions of native background knowledge into the recall of the foreign text. These were distinguished from the fourth category, errors that were judged not to be culturally based, e.g., remembering that the sick man in the Aboriginal text stayed with Miss Smith rather than Mr. Smith. Some of these might also be the result of cultural interference. If so, the scoring used would work against the hypothesis

proposed. A very small final category consisted of cultural intrusions that were actually contradictory to elements in the native story but were cases in which local cultural norms were so strong that facets of the native text were distorted. For example, in the Australian text, a number of men gave blood to the sick man. One Aboriginal subject referred to taking blood from the sick man, a practice common at the settlement where she lives.

Elaborations and distortions were measured on the basis of (a) number of idea units involved or (b) number of words when the material was not attributable to specific idea units. All protocols were scored by the two researchers. The few conflicts that occurred were resolved by discussion.

Results

The effects of three factors--nationality, story order (between-subjects) and story (within-subject)--were evaluated on eight dependent measures: (a) number of idea units of which the gist was recalled, (b) number of idea units elaborated, (c) number of idea units distorted, (d) number of idea units on which trivial (not culture-based) errors were made, (e) number of words of elaboration that were not attributable to specific idea units, (f) number of words of distortion not attributable to specific idea units, (g) total number of words of recall, and (h) mean number of words per main clause ("mean length of utterance" [MLU]). Separate analyses of variance were performed for each measure. Although the analyses were not independent, this procedure was chosen in order to facilitate comparison among various experiments of this type, where results of univariate ANOVAs are reported.

The analyses of theoretical interest concerned the nationality x story interactions, and all were statistically significant except on the trivial errors and MLU measures, (which were the interactions of least theoretical interest in the study). No other interactions were statistically significant.

There were two statistically significant main effects: On the MLU measure, American subjects used more words per independent clause than did Aboriginal subjects (means 9.35 and 8.00; $F[1,26] = 5.66$, $p < .05$). On the gist recall measure, more idea units were recalled correctly for the Western story than for the Aboriginal story (means 20.30 and 16.07; $F[1,26] = 5.22$, $p < .05$). This latter effect can be attributed to the fact that Aboriginal subjects had some familiarity with Western medical practices. It probably also reflects the embarrassment some Aborigines felt in repeating the native story, which contained concepts that have been ridiculed by Westerners. However, the nationality x story interaction on this measure precludes the interpretation that the Western story was the easier one to recall for all subjects. Table 1 displays cell means for the nationality x story interactions for each dependent measure summed over story order.

Insert Table 1 about here.

Greater gist recall and appropriate elaboration of the native passage, along with less gist recall and distortion of the foreign passage, were characteristic of both groups of subjects. The results concerning elaboration and distortion of the texts in particular indicate the crucial

importance of a shared knowledge base between the sender and the receiver of a message--either oral or written--for discourse comprehension.

Discussion

American subjects, because they were completely unfamiliar with Aboriginal culture, provided very strong support for the claim that the presence of schemata is a factor influencing comprehension and recall of a text. First, they recalled an average of more than 27% of the idea units in the Western story and only 13% of those in the Aboriginal text. For the Western text, an average of 3.5 idea units were elaborated. The corresponding figure for the Aboriginal passage was .2. This reflects the fact that when subjects were recalling the native text, but not the foreign text, additional information from their background knowledge was intruded. The subjects were unable to distinguish between old information and new information. For example, the text stated that the mother took her son to the doctor, but six American subjects "remembered" that she called first to make an appointment (a detail not present in the original story). Furthermore, American subjects often made explicit the cause-effect relations that had been only implied in the original passage:

AM 15: And she felt very bad <u>because</u> she knew then that the egg sandwich was what had made him sick.

AM 2: . . . and he was vomiting, <u>and so</u> she took him to a doctor's.

As was found in an earlier cross-cultural study (Steffensen, Joag-dev, & Anderson, 1979), there were extensive errors in the recall of the foreign passage. For American subjects an average of 6.5 idea units of the Aboriginal text were distorted, and there were an average of an additional

11.1 words of distortion that could not be directly related to idea units in the original. Corresponding figures for the American passage were .7 idea units and 1.5 words. A typical distortion of the Aboriginal text involved the following section: "After that, they gave him blood. A lot of men--about twenty--cut their arms with a razor blade . . ." The sick man then drinks the blood. This was changed to a transfusion by one subject:

AM 14: I didn't exactly hear the word you said, how they gave the transfusion, but it seems barbaric.

Another had the men cutting their wrists, rather than their arms. It was quite clear from their overall performance that American subjects were not able to integrate the details of the story into a coherent whole because they did not have the conceptual framework assumed by the teller.

An examination of the Australian protocols shows that Aboriginal subjects, like American subjects, produced culturally motivated elaborations of their native text. For example, in the section about the Aboriginal treatment, subjects added information about both the participants and the procedure:

AB 1: So he got a couple of men from his tribe to cut their arms and put blood in a dish for him.

AB 14: . . . he found a razor blade in the dirt . . .
(Both translated from ACE to SE)

AB 13: . . . the men sit around in a circle . . .

Of much greater practical value for those interested in medical care are the Aboriginal recalls of the Western passage and responses to the debriefing questions. In both these procedures, Australian subjects showed

incorrect, highly stereotyped responses to a common illness and its treatment. In the original passage, there were five events:

Event 1. Symptoms of child's illness: ". . . he wasn't eating right." "He said his stomach hurt." "He had a fever."

Event 2. Home treatment: "She gave him some Aspro." "She found some medicine . . ."

Event 3. Visit to the doctor: "The doctor weighed Peter. . . . He listened to his heart. . . . He needed some blood for a test."

Event 4. Flashback--cause of illness: ". . . they stopped for something to eat. The place wasn't very clean or tidy . . ." "Peter said his egg sandwich didn't taste good, but she told him to eat it . . ."

Event 5. Treatment: "Peter didn't like the medicine. . . . She gave it to him every day and he began to get better."

The story ends with the statement, "She still doesn't know why she bought food in that dirty place and let him get sick."

One Aboriginal subject's performance typifies the problems that this group had:

AB 5: Well, Peter was very sick and he was--and he wouldn't eat any food, and then his mother took him to the hospital. And the doctor weighed him. And the doctor said, "He's too thin." And he said that he had a fever. So they went back home, and had a supper. And his mother made an egg sandwich. And that little boy said, "Oh, my stomach aches." And his mother said, "That's all right. You don't have to say it, complain, to me." After that, he had some organge juice, from his sister, and then, then he said again, "Oh, I'm still achy, my tummy." And then, his sister said, "All right, I'll find medicine for you." And she gave it to him. (Translated from ACE to SE)

A comparison of the original text and the subject's protocol shows that she had major problems with the sequence of events. The real world temporal order for the text events was 4, 1, 2, 3, 5; her order was 1, 3, 4, 1, 2. Thus, the cause of the illness (4) was not understood and the event was recalled as a treatment of the illness: He's too thin, therefore feed him. The home treatments that the mother tried before taking her son to the doctor's office (2) are remembered as occurring afterwards. This may reflect the fact that Aboriginal Australians typically depend on health care practitioners for even the treatment of small problems that Western families normally handle at home. Of greatest importance, Event 5, repeated treatment with a prescribed medicine, is missing in this subject's recall.

Within each event, only certain propositions were recalled, a finding true for all subjects on both passages. However, in this case the propositions recalled reflected the topics that are emphasized in the health care of Aboriginal Australians. For example, the only activity of the doctor that was remembered was his weighing the child. Malnutrition is a major problem among Aborigines and the subject's responses to the debriefing questions also showed concern about malnutrition:

Exp: How did the mother know the little boy was sick in the first place?

AB 5: By not eating.

Exp: And--um--did the doctor say what made him sick?

AB 5: 'e was starved, gen.

In her last utterance, the subject indicated her uncertainty about the accuracy of her response by using the qualifier gen, but starvation was nevertheless the first thing that came to mind. Furthermore, in response

to the question, "What is the mother going to do so Peter won't get sick again? How is she going to keep him well?" the subject answered, "By giving him food gen." She did not understand or remember what had caused the problem (also only partially understood) and she responded with a typical diagnosis and treatment.

In this subject's protocol, expressions of maternal guilt are absent and indications of maternal responsibility are minimal. It will be noted, for example, that this subject recalled that it was the sister and not the mother who gave the medication to Peter after the visit to the doctor.

This subject provided evidence of a basic misunderstanding of the information presented in the text. The subject's protocol centered on a topic of immediate concern to Western practitioners--malnutrition. Eating spoiled food in a dirty restaurant apparently did not "fit" the subject's conceptualization of causes of illness and was understood and recalled as a response to the child's problem.

To further analyze the responses of the two groups, the most salient idea units in each of the five general episodes in the Western story were identified by the two authors, and their recall by all subjects tabulated. The total number of recalled idea units related to each episode and the percentage of errors made in recalling these idea units for the Aboriginal and American groups were: (a) symptoms: Ab. 25, 8%; Am. 45, 0%; (b) home treatment: Ab. 34, 18%; Am. 37, 0%; (c) visit to doctor: Ab. 21, 47%; Am. 24, 4% (d) cause of illness: Ab. 47, 26%; Am. 94, 5%; (e) treatment: Ab. 12, 25%; Am. 24, 0%.

Both groups recalled about the same total number of idea units concerning home treatment and the visit to the doctor, but the high error

rate for Aboriginal subjects suggests that they did not understand these episodes, particularly the interaction of doctor, patient, and parent (47% incorrect). In the case of the cause of illness and prescribed treatment, Aboriginal subjects recalled only half as many idea units as American subjects did, and had one-fourth of what they did recall wrong. These figures would suggest that their success in following programs of treatment and prevention will be affected at least in part by a failure to understand what is involved. Only in the case of symptoms was there a low-error rate. This probably reflects a convergence between the two groups of what constitutes evidence of illness, at least in the case described in the text.

Implications

The most important implications of this study are related to the Aboriginal subjects' difficulty in processing the information in the Western text. By asking them to recall a common occurrence based on orthodox medical practices and scientific assumptions, it was possible to demonstrate that there are problems in the comprehension/recall process that can be attributed to the absence of the appropriate underlying schemata. The fact that they performed better on the Aboriginal text shows that the problems could not be attributed to their ability or the methodology used, and the fact that the relative difficulty of the two passages was reversed for American subjects supports the assumption that the Western text was not inherently more difficult.

A number of researchers have provided evidence of the importance of addressing the patients' model of illness for the successful delivery of health care services (Kleinman, Eisenberg, & Good, 1978; Unterhalter, 1979).

However, this world view may be so different from the medical practitioners' that simple explanation is not enough; what is called for is a "cultural negotiator" in Weidman's sense (1979). This is a person with a transcultural view who can bridge the chasm separating the traditional and the orthodox world views, who can negotiate the two conflicting sets of beliefs and assumptions in order to improve the quality of health care. This is most important when there are widely differing beliefs because often patients may not be aware that they are not understanding.

The most satisfactory approach would be to adapt Aboriginal beliefs to Western beliefs in a way that makes it possible to integrate the Western methods of prevention and treatment into the Aboriginal framework. A prime example of this is provided by Hamilton (Note 1). The problem was to get across the information that flies are the vectors of trachoma. This was synthesized with the conflicting Aboriginal belief that this illness originates at sacred sites by suggesting that flies touch the sacred sites, then carry the disease to peoples' eyes. The result was a great increase in the use of screens. Clearly all indigenous etiologies will not be so amenable to integration with Western ones. However, such an approach will probably be necessary if progress is to be made in the delivery of health care.

Relating Western beliefs to Aboriginal schemata will make it possible for the Aboriginal patient to understand what is being said, assess its validity, and follow through on the schedule of treatment because there will be a framework into which the information being presented can be integrated. Furthermore, by accommodating to the patient's beliefs, the greater explanatory power of that system can be tapped (Reid, 1978) and

both the fear of cultural separation (Creyghton, 1977) and the impersonality of modern medicine (Kleinman, Eisenberg, & Good, 1978) can be mitigated.

Given the goal of incorporating information about Western scientific thought into the Aboriginal framework, there are two other conditions that must be met. First, any explanation given should avoid creating a "hybrid theory" that incorporates facets of the two belief systems. Rather the Aboriginal theory of illness should be used as a metaphor for the theory underlying Western medicine so that as Aboriginal society acculturates to the dominant group, the people will be able to move toward a more orthodox system. Second, those practitioners who are responsible for the delivery of health care services must respect the Aboriginal beliefs supporting the "bridge" explanation and must present this explanation without demeaning indigenous values. Such a transcultural approach will increase the level of understanding that the patient has of the procedures being used, compliance with those procedures, and the general level of health of the population.

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Table 1

Means and Results of Significance Tests

for Nationality X Story Interactions

Measure	Americans		Aborigines		$F(1,26)$
	Western story	Aboriginal story	Western story	Aboriginal story	
Total words	200.60	125.40	147.73	175.40	13.13*
MLU	9.70	9.00	7.83	8.17	1.92 n.s.
Gist recall (IUs)	27.27	15.07	13.33	17.07	18.50*
Elaborations (IUs)	3.40	.20	1.07	5.13	39.17*
Distortions (IUs)	.73	6.47	4.13	.47	71.95*
Trivial errors (IUs)	1.47	1.73	1.00	2.07	.83 n.s.
Elaborations (words)	33.53	6.87	17.13	31.00	10.02*
Distortions (words)	1.47	11.07	24.20	2.07	12.33*

* $p < .01$